Restore the River Corridor

The river corridor encompasses approximately 210 square miles adjacent to the Columbia River. It is divided into three areas: the 100 Area, comprising nine shutdown plutonium production reactors and support facilities; the 300 Area, comprising manufacturing and research facilities; and the 600 Area, encompassing the mostly vacant land between the 100 and 300 Areas.

Nuclear Energy Legacies

The cleanup of legacy sodium systems continued in the 337 Building. The small-diameter (less than 8 inches), sodium-wetted piping was removed from the sodium test loop in 337-B, associated with the Composite Reactor Component Test Activity vessel, and also from the 3718M storage vessel. Starting with a previously drained test loop, asbestos insulation, electrical heaters and controls were stripped from the piping. The piping was then cut into manageable lengths (shown at right), and packaged in shipping drums (shown below). This removal and packaging of the piping concludes a multi-year effort involving a number of Fluor Federal Services craftsmen.

River Corridor Project

Completing a milestone to clean up the 324 and 327 Buildings in the 300 Area one month ahead of schedule, River Corridor Project personnel finished moving radioactive material — equivalent to 342,113 curies — away from the Columbia River. This work included the following:

The project mission is to safely deactivate contaminated buildings and ship radioactive and hazardous waste out of the 300 Area to compliant storage away from the city of Richland and the Columbia River.

- Packaging and shipping "fines," or sanding residues, which were stored at the 324 Building, to the Central Waste Complex in the Hanford Site's 200 Area

- Removing from the 327 Building, a curium source that had been separated from Shippingport reactor fuel in the 1960s. Removing this material will allow the classification of the 327 Building to be changed from Nuclear Hazard Category 2 to Category 3. This change in classification indicates lower risk and fewer requirements.

Fines were shipped from the 324 Building to the Central Waste Complex.

Removing the curium source from the 327 Building allowed the facility to be re-classified.

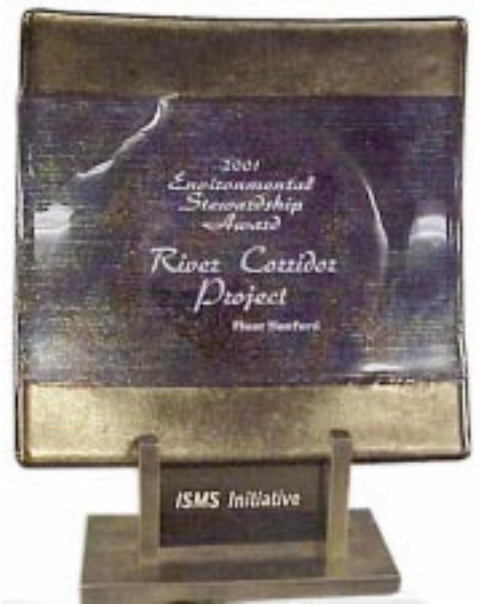
- Removing all 16, 1-gallon waste buckets from B and C Cells in the 327 Building

- Removing 3 more 4-ft. by 4-ft. by 8-ft. steel boxes of low-level waste from the 327 Building basement. Over 60 percent of the boxes have been moved.

River Corridor Project

Project personnel completed removing the 303K Building slab. The project received the Professional Engineer Certification for 303K Building Resource Conservation and Recovery Act (RCRA) Closure. This certification completed the 300 Area Accelerated Skyline Initiative, which included the earlier removal of 2 water towers and the 303K Building.

Project personnel installed the 324 Building Airlock/A Cell Bridge Hoist Structure, which moves spent nuclear fuel from the airlock into the shipping cask for removal from the 324 Building.



In the 200 Area, project personnel completed characterization — the examination of the existing conditions of an area to identify hazards and possible threats to employees, the public and the environment — of the 231-Z cells and the initial manned entry into 224-T C Cell (photo, above). Characterization provides the information needed to control hazards and apply the technology needed for cleanup or stabilization and containment.

The first annual Fluor Hanford Environmental Stewardship Award, (shown at left) designed to provide greater recognition for achievement in the environmental arena, was presented to the River Corridor Project on May 2 during the Presidents' Zero Accident Council meeting at the Hanford Health and Safety Exposition. The Project was recognized for its outstanding rapport and involvement with the Department of Energy Richland Operations Office (DOE-RL) and regulators in work planning and prompt issues-resolution tactics, the professionalism of its environmental staff and exemplary waste minimization and recycling achievements.

An empty, new MCO arrives at Hanford's Canister Storage Building to be moved into a shipping cask and then sent to the K-West Basin to be filled with spent nuclear fuel.

Spent Nuclear Fuel Project

This quarter, 24 MCOs containing approximately 111 metric tons of irradiated uranium were shipped out of K-West Basin. Since December 2000, 77 MCOs containing a total of 369 metric tons of irradiated uranium and over 11 million curies of radioactivity have been removed from the Columbia River shoreline. All MCOs except one, which is undergoing further work, are safely stored 40 feet underground at the Canister Storage Building in Hanford's central plateau.

The Spent Nuclear Fuel Project reduces the risk to the Columbia River by safely relocating fuel and sludge in the K Basins to interim storage or disposal in the center of the Hanford Site. It will also deactivate the 100K facilities.

Most of the spent nuclear fuel stored in the K Basins, located in the 100 Area, was irradiated in the now shutdown N Reactor. Before the Spent Nuclear Fuel Project began moving fuel out of the K Basins in December 2000, 105,000 N Reactor fuel assemblies resided there. The amount of radioactivity, measured in curies, was approximately 55 million curies.

Spent fuel is loaded into baskets and then into multicanister overpacks, also known as MCOs. The fuel is dried in the Cold Vacuum Drying Facility and placed in dry, interim storage in steel tubes beneath the Canister Storage Building in Hanford's central plateau.

Spent Nuclear Fuel Project

Spent Nuclear Fuel Project personnel continued to make progress by:

- Continuing their safe work record to attain 4.7 million hours without a day lost to injury, a Hanford Site cleanup project record
- Completing the construction and installation of the Fuel Transfer System that will move K-East Basin fuel into K-West Basin for processing. The system includes two annex buildings
- Cleaning and removing more than 300 old fuel canisters from K-West Basin.

The Fuel Transfer System was installed to move fuel from K-East to K-West.

Hanford Site Operations personnel fabricated 294 spent fuel baskets this quarter. The steel baskets are each 2 feet tall, 22 inches wide, and weigh 500 pounds. The project is well ahead of schedule; nearly 75 percent of the total baskets required have been fabricated.

Thirty-six MCOs with full quality inspections were received. The project now has over 62 percent of the total MCOs needed to store the entire inventory of spent nuclear fuel.

K-East Basin Contamination Survey

Fluor Hanford is using state-of-the-art equipment to perform underwater surveys of radioactive contamination on the concrete of the K-East Basin. Under this task, the Pacific Northwest National Laboratory (PNNL) has designed and fabricated cesium survey equipment to measure contamination on the concrete walls and floors. Testing of the equipment was completed in June. Data will be used to validate models used to predict contamination levels and develop safe facility deactivation plans.

Environmental Restoration Along the River

Environmental Restoration Contractor workers overpack deteriorated drums before moving them to a staging area.

Seven hundred thirty-seven drums have been removed from the 618-4 Burial Ground by the Environmental Restoration Contractor team led by Bechtel Hanford, Inc. The drums, containing depleted uranium shavings and uranium oxide, were discovered buried at the site located 1.5 miles north of Richland and just 400 yards from the Columbia River. Of the total, 162 drums have been disposed and 525 are staged at the Environmental Restoration Disposal Facility awaiting treatment. Fifty drums remain at the burial ground for sampling before being transported to the Environmental Restoration Disposal Facility.

This quarter, more than 180,000 tons of contaminated material were removed from several remediation sites along the Columbia River.

The Environmental Restoration Contractor team is simultaneously placing 4 reactors — D, DR, F and H — into Interim Safe Storage. Significant progress this quarter included structural steelwork for the new roof enclosure at DR Reactor and excavation of backfill from the F Reactor fuel storage basin. Seventeen spent fuel nuclear elements were discovered in the backfill and safely retrieved. Innovative radiation-control techniques and the deployment of a remotely operated excavator kept exposure to personnel at a minimum.

A new roof structure is being placed on DR Reactor. Demolishing 80 percent of the facility footprint, sealing all openings, and constructing a new roof, keep the reactor core safely isolated from people and the environment for up to 75 years.

What's Next in Restoring the River Corridor?

On July 1, the River Corridor Project became the Central Plateau Remediation Project. This project includes the former workscope of Bechtel Hanford, Inc.: the Groundwater Protection Project, the 200 Area Facility Disposition Project, the 233-S Plutonium Concentration Facility Decommissioning Project, the 618-10 and 618-11 Burial Grounds and the 200 Area Remedial Actions. In the next quarter, personnel working to restore the river corridor will do the following:

- Ship the small-diameter sodium-wetted piping from the 337 Building to an off-site treatment center
- Prepare the sodium cold trap, a sodium purification device, for shipment to an off-site treatment center
- Solicit proposals for dispositioning the residual sodium in the 3718M storage vessel and the 337-B Building Composite Reactor Component Test Activity vessel. Up to 500 gallons of residual sodium may remain in these 2 drained vessels
- Transition the 310 Treated Effluent Disposal Facility and 340 Facility Project to the Waste Management Project
- Complete the Readiness Assessment and meet the 324 Building accelerated schedule for shipping 5 pressurized water reactor spent fuel assemblies
- Dispose of the ion-exchange columns in the 183K vaults
- Remove, dry and place in storage approximately 40 MCOs of spent nuclear fuel containing approximately186 metric tons of irradiated uranium, which will represent approximately 6 million curies of radioactivity removed from the Columbia River shoreline
- Continue safe work hours record
- Successfully perform Contractor and DOE Operational Readiness Reviews of the Fuel Transfer System at the K Basins
- Construct and install the K-East Basin sludge and water systems
- Begin surveying K-East Basin walls for contamination levels
- Complete the DR Reactor Safe Storage Enclosure and all demolition activities on D Reactor.